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The Transformation of Taiwan's Upper Secondary Education System: A Policy Analysis

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Abstract This paper explores the policy issues circling around the structural "transition" in upper secondary education implicit in the twenty-year increase in secondary and third-level school enrollment rates in Taiwan. This expansion has taken place within a secondary school system which is rigidly divided into both general, i.e., academic, and vocational tracks and into public and private sectors: the majority of students are enrolled in the private vocational sector which is only loosely articulated with the university sector. These features of the school system are analysed against the background of social and economic developments in Taiwan as well as public opinion. The analysis suggests that the present structures of school must be "reformed" in ways that will result in a more unified secondary system with both greater public funding and better articulation of all school types with the third level. The policy options that circle around the possibility of such reforms in the areas of curriculum, examination structures and second level-third level articulation are discussed and a policy framework for the reform of the Taiwan secondary education sector is outlined.

My elder daughter is attending cram school to prepare for the two-year junior college entrance examination. (She didn't do well last year when she graduated [from high school].) It costs a lot of money to pay for the cram

school, but I will do my best to support my daughter. It is encouraging to see her studying so hard. I wish my son was as ambitious as my daughter; he graduated from a public engineering [vocational] school three years' ago. He just didn't like school at all. But I think it would be better if he could stay longer at school to get more education. A decent job is not easy to get with a high school level diploma nowadays, is it?

Mother of a middle school student

I think there is too much difference in tuition fees between public and private schools. I believe private schools charge too much. This leaves the poor less choice in getting a proper education. From a taxpayer's point of view, the difference should be much less. That means the government should get involved by giving private schools more funds so that private school tuition can be reduced.

Factory worker

The dramatic economic development and social modernization of Taiwan has, needless to say, been accompanied by increasing participation in the formal educational system, particularly at the secondary and third levels (see Figure 1). Between 1976 and 1995 net enrollment rates (including part-time students) in upper secondary schools (15-17 years of age) increased from 43 to 79 percent while net third-level enrollment rates (ages 18- 21) increased from 10 to 28 percent (Ministry of Education 1996: Table 4). (Note 1) Overall upper secondary level enrollment rates at these levels place Taiwan in the second tier among industrialized countries, along with the United States, Canada, and the United Kingdom, and ahead of Australia, Greece, and Spain (OECD, 1993: Table P13).

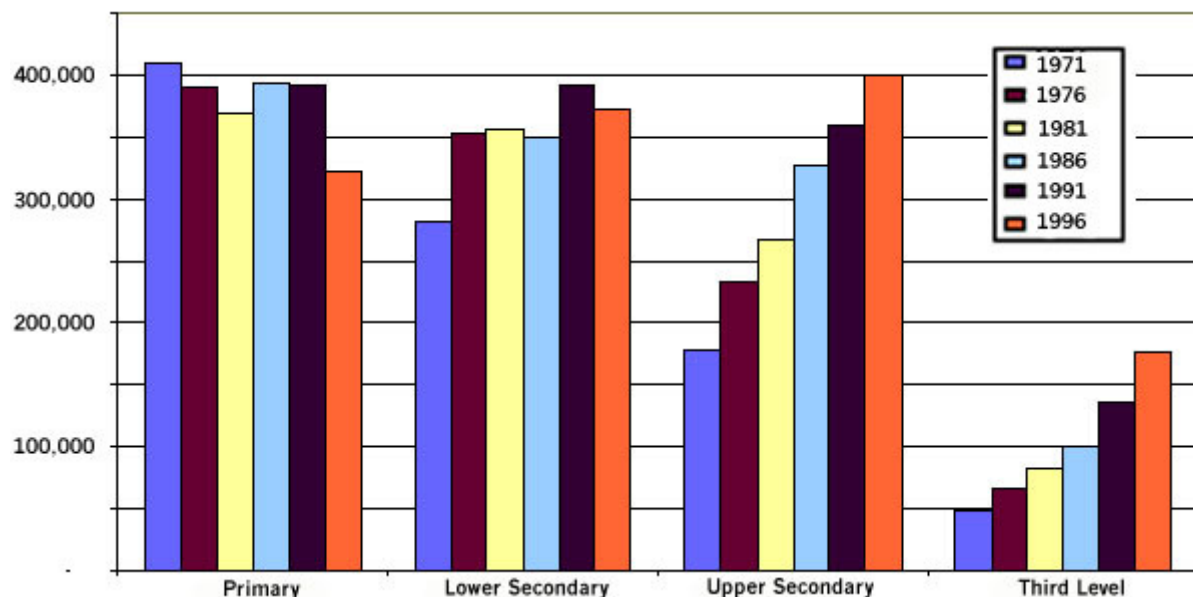


Figure 1: Numbers of students at all levels (1970-1995).

Our goal in this article is to explore and spell out the policy issues which we see circling around the structural "transition" in upper secondary education that is implied by the

twenty-year increase in enrollment rates in this sector in Taiwan. As we attempt this, we will discuss, first, the background of these issues in the structures of Taiwan's present upper secondary and third-level systems. We will then consider some of the larger social and cultural forces which play on the expansion of Taiwan's secondary-level and college-level systems as a context for an examination of the pressures within and around these systems. Finally, we will speculate on the policy problems emerging from these pressures that need to be faced by Taiwan's educational policy makers.

As a background to this discussion--and we will be exploring these issues in detail below--we should note that the institutions that provide secondary and third-level education in Taiwan are divided into firmly separated academic and vocational tracks. It is a dual-track system. Thus, structurally, Taiwanese secondary education conforms to the pattern commonly found in continental Europe but unusual in English-speaking countries. In addition, Taiwan provides much of its secondary schooling, and particularly its vocational schooling, by way of a private sector which, while heavily regulated, receives only limited state support. Third-level education has a parallel structure with, again, a significant private sector.

In this article we will argue that these characteristics of the secondary and third-level systems pose, and will pose, major problems for educational policy makers as Taiwan's educational development continues. We will argue that the present pure dual-track, public/private system is, and increasingly will be, unable to accommodate the expectations for educational opportunities of Taiwan's families and youth--and will, therefore, require major "reform." This is increasingly recognized by Taiwan's policy makers and élites; however, we will also be arguing that the structures of the present system, and particularly its heavy reliance on the private sector, will make "reform" of the system quite difficult--and this is not so widely recognized.

The formal structures of the Taiwanese education system

Academic and vocational education

Figure 2 presents a schematic outline of the formal structures of the Taiwanese education system. This structure emerged after reforms in 1968 when the then six-year span of compulsory education was extended to nine years and, under the manpower-development economic policies of the then-government, the increasing number of students making the transition to upper secondary school were directed to the secondary vocational rather than the academic sector. (Note 2)

These general policies and the institutions for schooling that emerged from them have remained in place since the early 1970s to provide the framework for Taiwan's present secondary education system--with the consequences seen in Table 1. The percentage of students enrolled in the academic high school (full-time and supplementary) has dropped from 35 percent of the in-school cohort in 1971 to 20 percent in 1996 while vocational secondary (full-time and supplementary) and junior college enrollments have increased from 65 percent of the cohort in 1971 to 80 percent in 1996.

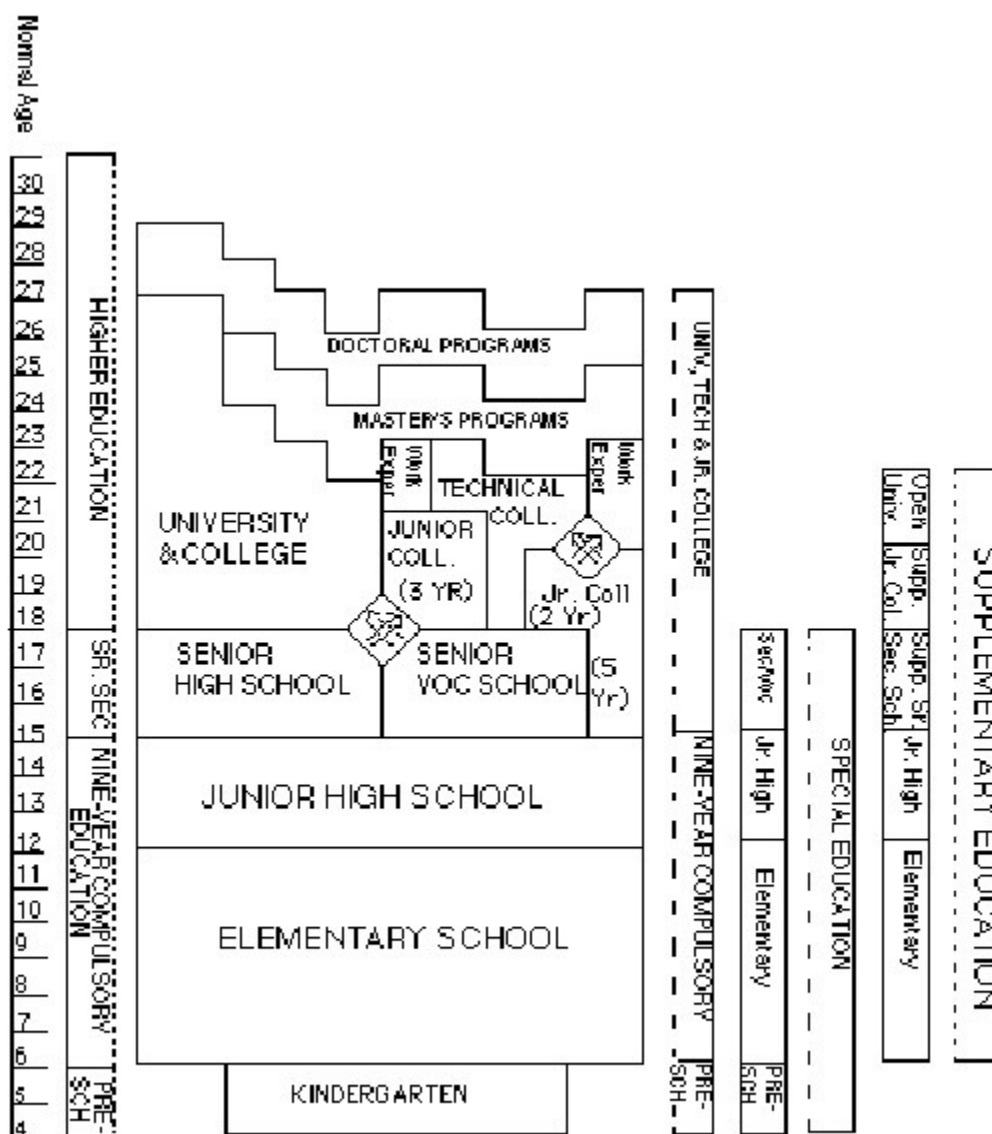


Figure 2: Structures of schooling in Taiwan.

The implications of these enrollment patterns in upper secondary schools must also be considered in the light of both the growth in third-level enrollment and the structures of articulation of the different secondary schools types with the third-level system. Thus, in recent years the third level has seen the same pattern of growth as the secondary level: as we noted above, net enrollment rates in third-level institutions have increased from 11 percent of the population aged 18-21 in 1980 to 28 percent in 1996. However this overall enrollment rate conceals substantial differences in the transition to the third level by graduates of secondary academic and vocational schools (Ministry of Education, 1996). About 60 percent of the students graduating from academic high schools entered the third level in 1992 as compared to 20 percent of vocational graduates (Department of Education of Taiwan Province, 1994c). (Note 3)

Table 1
Student Enrollment (Percent) in Upper Secondary Level by School Types (1971-1996)

Year	Academic High School	Vocational School	Junior College	Supplementary Vocational School	Supplementary Academic High School
1971	33.1%	43.0%	11.7%	10.4%	1.8%
1976	23.0	50.0	11.0	14.6	1.3
1981	20.9	52.9	12.5	12.6	1.2
1986	17.9	52.9	12.4	15.8	0.9
1991	17.9	51.7	15.7	14.1	0.6
1996	20.1	49.7	18.1	11.7	0.4

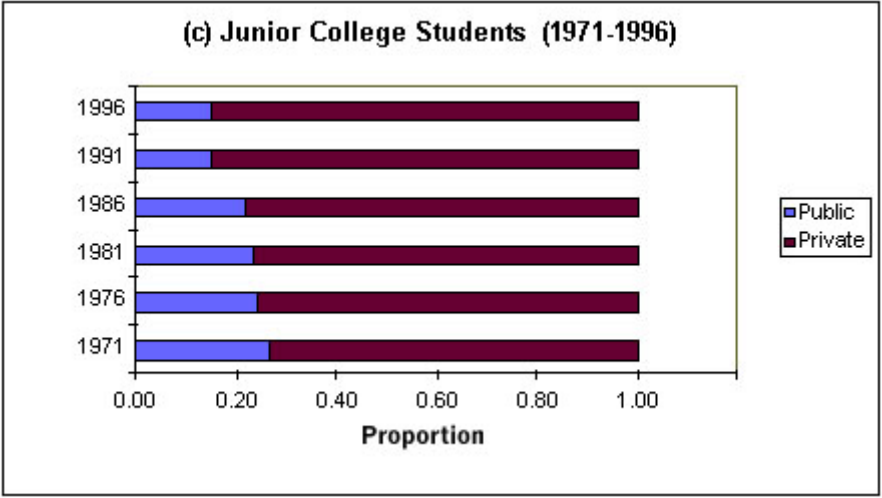
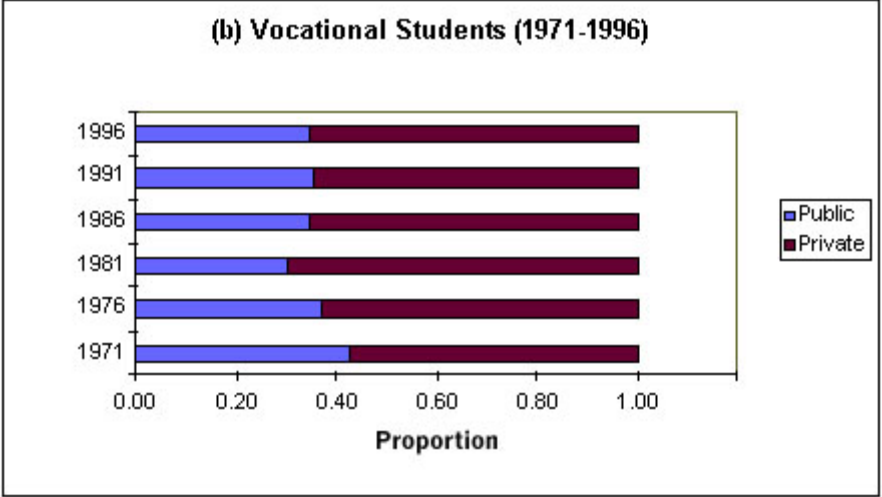
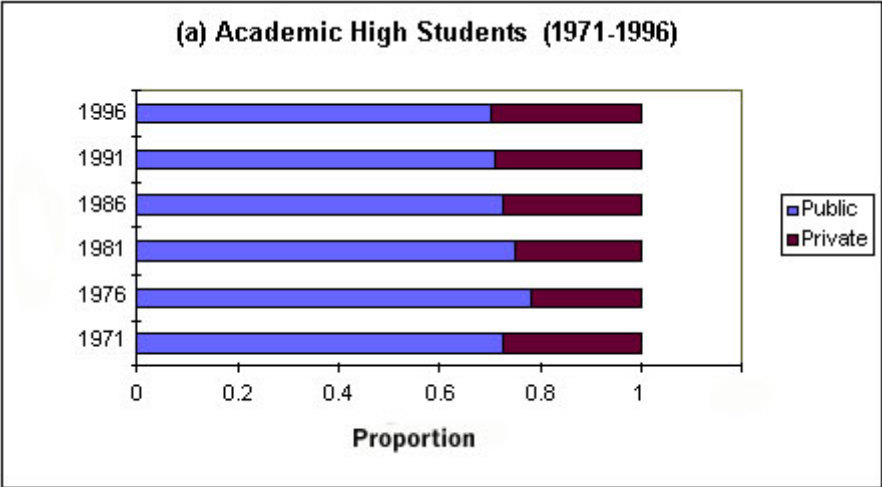
Source: Ministry of Education. 1997.

In other words, the possibility of successfully transferring to the third level--with all of its status and occupational opportunities--is tightly linked to secondary school track. This arises from both the organization of institutions within the third level and the way in which access by students to the third level is organized. Entry from secondary school to third-level institutions is mediated by a set of examinations: academic high school graduates take one of set of examinations based on the prescribed curriculum of the academic secondary school; success on the examination determines which program and institution a student will be admitted to; vocational school graduates take a different set of examinations which are again based on the (different) vocational school curricula which allocate students, depending on achievement, to the institutions (i.e., two-and three-year junior colleges) which are formally articulated with the vocational sector. Only limited transfer from the secondary vocational sector to the academic third-level sector is possible at the point of entry to the third level.

Public and private schooling

In addition to the structural differences between school types or tracks, Taiwan has, as we noted earlier, a mixed, private- public pattern of educational provision--with a substantial private sector, particularly in the secondary and third-level vocational sectors.

Figure 3 presents the proportion of private and public places in the upper secondary school types and university sector since 1970. The state has provided the bulk of the senior high school places (more than 70%) for most of the period; however in the secondary vocational sector (both vocational high school and junior college) the role of the state shrinks dramatically and has declined over the period, from state provision of about 53% of the places in 1970 to about 37% in 1996.



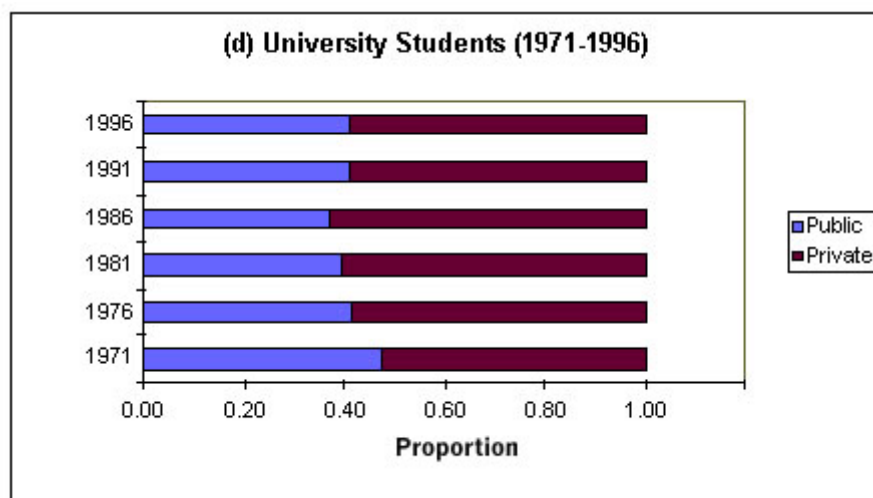


Figure 3: Public and private enrollments in upper secondary school types and universities (1970-1996).

Private secondary-level schools receive only limited support from the state. The result is that private schools assess much higher school fees than do public schools but the per capita expenditures in these schools are much lower than in public schools--and per capita expenditures have increased more in public than in private schools. (Note 4) These differences reflect the cost structures of a private schools, but, as Chen (1993) reports, reflecting Ministry of Education findings, they are accompanied by a lack of investment in facilities and sub- standard equipment.

In summary, much of the responsibility for the provision of places to accommodate the expansion of demand for secondary schooling, i.e., in vocational schools, has been given to the private sector. At the same time, the state has provided significant subsidies to the smaller number of academic and vocational secondary students enrolled in state-sponsored schools. (Note 5) We cannot here consider the historical roots or concomitants of these priorities (Note 6) but, as we argue later, their present consequences pose real problems for the transformation that we believe that Taiwan's secondary education system must undergo over the next 20 years. But before considering these issues let us consider some explanations of the forces underlying the increasing commitment to schooling as the pathway to adulthood that is occurring in Taiwan. The dynamics that these explanations provide a firm basis for foreseeing the problems and tensions that the system will face over the next decade.

The expansion of the role of school in the pathway to adulthood

It is a commonplace that schooling has assumed a dominating role in the pathway to adulthood in modern societies. To understand this expansion of the school's role we must consider, first, its consequences and, second, its causes. The consequences associated with this expansion involve fewer explanatory issues than do its causes.

Thus, Trow (1960) captured many of the implications of school (and college) expansion, both for the changing social roles and the educational characters of the secondary schools, with his now-classical characterization of the stages of the American secondary school's movement towards the hegemony of the school as an institution dominating young adulthood. At the beginning of the process, in the pre-world war 1 period, the American secondary school was an *élite-preparatory* institution enrolling a

small proportion of the age cohort and offering a curriculum that assumed that many of its graduates would, or should, advance to some form of higher education. This school was succeeded in the inter-war period by a *mass-terminal* school with a significant vocational orientation and curriculum in which there was widespread participation to the end of a secondary education, but most students did not continue their school careers after this point. This mass-terminal school changed in the post-World War II era to the *mass-preparatory* school in which the college-preparatory curriculum again assumed major importance for the secondary school, although the terminal function continued for many. While the specific terms of Trow's account of the transition of the secondary school were embedded within the particular transformation of the U.S. high school in the 1950s, his framework has been seen to have a world-wide validity, even if its expression might differ across societies.

But how can we explain this increasing hegemony of the school as an institution over the pathway to adulthood? It has been usual to attribute the dominance of, first, the mass-terminal secondary school and, later, the mass-preparatory secondary school with its link to the modern college and university to the need for the specific forms of human capital required in modern economies that, it is assumed, schooling alone can provide. However, it is, as Dreeben (1972) argues, not self-evident that the hypothesis of such a linkage can be sustained. As he argues, perfectly adequate occupational training of every kind has been, and is, provided through apprenticeship broadly conceived. It is, for example, not clearly the case that those who prepared for legal careers via articles, i.e., apprenticeship, are or must be less skillful than law school-trained attorneys. Or that graduate education of physicians makes for unambiguously "better" physicians than undergraduate medical training. Furthermore, while there have been and are careers that are intimately associated with advanced schooling, many of these careers have been and are within the (expanding) institution of schooling itself, i.e., teaching in schools or universities. Indeed, as Dreeben (1972) points out, it is only teaching as an occupation that can be seen as clearly associated with the expansion of schooling!

In the face of such difficulties with using human capital arguments to account for the expansion of the scope of schooling, Dreeben makes a different case for the "success" of the school as an institution in modern societies. He links schooling, first, to its most basic role in communicating broad literacies and, second and following Marshall (1964) and Parsons (see Englund 1996), to its symbolic and institutional role as a concomitant of an expanding conception of "citizenship," with its accompanying rights. In the course of this century in the United States and, more recently, in most other industrialized societies, advanced (secondary and third-level) schooling, like health care, state-provided welfare, and other income-transfer programs more generally, has become integrated into social understandings of the rights of access to valued social goods associated with the idea of citizenship. In this analysis Trow's account of the expansion of the scope of the American secondary school--and the related expansion of the scope of the college-- becomes a manifestation of an expansion of the nature and scope of the idea of a common and universal citizenship seen as the right to participate fully in the institutions of the social and cultural order.

This right of and demand for education is, of course, exercised through a particular interactions between the ambitions and capacities of families, students, etc., and corporate actors, such as the state, which both provide schooling either directly or by way of subsidy or legitimation of private providers and also define the framework of occupational credentials and the forms of rationing of these credentials, *not* of occupational skills as such. The ways in which such interactions play themselves out vary, of course, depending on the characteristics of particular regimes. But, in general,

public demand for education and/or credentials induces the state both to create institutions to meet those needs and to regulate their availability--because the very legitimacy of the state requires responsiveness to both "public" and "special" interests (Craig, 1981; Craig & Spear, 1982a, b). (Note 7) This, in its turn, channels societal expectations, and thus "public" interests and the interests of a regime, as a provider of education and the legitimator of the credentials, etc., converge. Schooling becomes *the* pathway to adulthood because of its legitimation of occupational credentials as well as the rationing of the availability of these credentials, *not* of occupational skills as such. And, of course, this convergence is most complete when a state is, or claims to be, fully democratic, i.e., responsive to its citizens and their interest groups.

It is forces such as these which are currently working themselves out in Taiwan as both socio-economic and political developments converge.

Social development and citizenship rights in Taiwan

There is no need to repeat here the story of economic and social development in Taiwan over the past three decades. High growth rates of GNP have resulted in incomes and living standards that have reached levels which are comparable to those of western industrialized nations. This development has, moreover, been experienced by much of the population--with the result that Taiwan has one of the most equitable distributions of wealth among both developing and industrialized countries (Deininger & Squire, 1996). As a result, a substantial "middle class," defined fairly narrowly, has emerged with an estimated size of between 25 to 40 percent of the adult population (Tien, 1989, p. 33; Tien, 1992, p. 36).

These economic changes have inevitably led to changing socio-cultural *perceptions*. As seen in Table 2, as long ago as 1982 36 percent of Taiwanese saw their parents as middle class but 54 percent saw themselves as middle class. Nine percent saw themselves as upper middle class--but 33 percent saw their offspring as becoming upper middle class (Cheng, 1993).

Table 2
Perceptions of Social Stratification in Taiwan

Social Stratum	Parents	Self	Offspring
Upper	1.2%	0.6%	7.3%
Upper-middle	7.2	9.3	32.6
Middle	36.1	54.7	36.9
Lower-middle	36.4	26.8	5.8
Lower	19.1	8.6	1.0
Uncertain	-	-	16.4
Total	100.0%	100.0%	100.0%

Source: Cheng. 1993.

Such social and cultural changes have pushed and made possible Taiwan's political

and educational transformation. The long-term ruling political party, the Kuomintang (KMT), now retains political power on the foundation of a real election victory and is, moreover, "investing heavily in . . . policy areas where the general public has an immediate . . . stake. These areas include social welfare, environment, consumer welfare, regional development, and many other issues that are common to a society reaching a higher stage of economic development" (Cheng, 1993: 214). The consequences of these developments, when linked to the traditional Chinese commitment to and respect for formal academic education, have (and will have) profound implications for both social demand for secondary and third-level education and for understanding about how it should be provided--in terms both of the state's role as a provider and institutional frameworks of provision and credentials.

We can detect traces of this social and cultural demand in several educational indicators. Thus about 50 percent of middle school 1st graders (grade 7) hope to enter an academic high school and 35-40 percent of 3rd graders (grade 9) have the same aspiration. Sixty to 70 percent of middle school students in the capital, Taipei, as distinct from 40-45 percent of middle school students in Taiwan Province, plan to enter an academic high school (Ministry of Education, 1994). The transition rate of junior high school graduates entering senior secondary school increased from 68 percent in 1981 to more than 80 percent in 1988 and about 90 percent in 1996. Senior secondary school net enrollment rates increased from 53 percent in 1981 to 73 percent in 1990 and about 80 percent in 1996. Between 1988 and 1992 the transition rate of senior secondary graduates entering third-level institutions increased from 19 to 31 percent.

However as we have already noted, such aggregated data, with its clear evidence of an increasing commitment to schooling as a pathway to adulthood, conceals major differences between the *opportunities* associated with the different secondary school types. Thus while the transfer rate of senior high school graduates to the third level increased from 45 to 57 percent between 1980 and 1995 that of vocational school graduates increased from three (in 1987) to only 20 percent. Only about five percent of vocational school graduates are admitted to universities (Department of Education of Taiwan Provincial Government 1994a, b), with the result that 90 percent of university students are graduates of academic high schools.

As we have also noted, Taiwan deploys secondary education by way of a complex, relatively "pure" multi-track system: enrollment in the two major school types at the secondary level, the general or academic high school (enrolling about 20 percent of students in 1996) and the vocational school (80 percent), represents very different educational opportunity structures and, in so doing, foreshadows very different--and increasingly different--educational and occupational careers. One part of the system has become, to use Trow's (1960) terms, a mass preparatory system while the other part remains a mass terminal system. In this system vocational students are severely disadvantaged--both in terms of their access to the full range of third-level opportunities, i.e. to the university sector, and the private costs (when compared to public, largely academic schools) associated with enrollment in a (in many ways) less desirable sector. It is this structural problem, and more important the institutions which flow from these structures, e.g., the examination systems which allocate students to upper secondary school types and the university sector, which creates many, although as we will see later not all, of the pressures and tensions the system is experiencing.

Defining the mismatch of supply and demand

What is the extent of the mismatch of the mismatch between the supply of places in

the third-level university sector and demand for those places among vocational students? We can go some of the way in specifying its present scale using proxy data. Thus one estimate of the numbers of "dissatisfied" students in the vocational sector can be secured from registrations for the Joint College Entrance Examination. In 1994 approximately 12,000 of the 125,000 students registering for this examination were from vocational schools--although they had little chance of success. (Note 8) In 1993 136,808 students also registered for the College Transfer Examination; 9,006 of these registrants were admitted to colleges, 8,202 of whom were junior college graduates (Council of Educational Reform, 1995).

Another perspective on the size of the vocational school population aspiring to enter a university can be seen in the number of vocational school graduates who are not attending third-level institutions and not working; these missing persons are assumed to be attending a cram school to prepare for a university or junior college entrance examination (Department of Education of Taiwan Province 1994b). This group increased from 10 to 20 percent between 1977 and 1992, and it is estimated that about 80 percent of the group are planning to take a third-level entrance examinations after a year in a cram school. Extrapolating from the size of the graduating cohort, this suggests that there are currently about 23,000 vocational students actively aspiring to third-level entry.

Aggregate data on this kind gives one kind of picture of the "demand" for third-level places by vocational students, at least insofar as an estimate can be derived from actively "dissatisfied" upper level vocational students. But what of the silent majority of vocational students and the parents of those students? What are their attitudes toward their secondary school options? We sought to secure an understanding of these issues by way of face-to-face discussions with middle and vocational school students and their parents.

Four sets of middle and vocational school students in Taipei city and suburban Taipei and in a small community (population 45,000) in the southern part of the island were group- interviewed. We followed up these discussions with individual interviews of those parents of these students who we could contact either by phone or face-to-face. Both students and their parents came from both working and middle class families. (Note 9) Altogether 47 students (17 from vocational schools; 30 from middle schools) and 14 parents were involved in these discussions. While our sample of students and parents was opportunistic, it was not (we believe) biased in terms of social class or ethnicity.

Our goal in undertaking these discussions was to tap the feelings and attitudes of "typical" students and parents towards the systemic problems our more formal analysis seemed to be identifying. Thus we were concerned particularly with the views of, first, vocational school students and their parents towards the vocational sector of the secondary system and the inequitable opportunities for access to the third level that we saw it offering. We wondered how students and parents saw these issues. Second, we were interested in the views of middle school students and parents who were facing the issue of choice of a school type on these same issues. Overall our questions were: Do the typical clients of the system, and in particular the clients of the vocational sector, share in the understandings of the system--and the implicit critique--that emerges from an analysis of the kind that we were undertaking? Can we see evidence of an increasing dominance of the idea of schooling as *the* pathway to adulthood and a press towards the "academic" sector? Our analysis predicted such a movement in public attitudes towards schooling itself along with an increasing rejection of the vocational school based on our readings of theories of schooling expansion such as Trow (1960), Dreeben (1972), and Craig (1981; Craig & Spear, 1982a, b) which are, of course, largely based on American and western cases.

As will be seen below, the findings of the group interviews modulate and qualify--but also extend in one important way-- the interpretation of the major problems facing Taiwan's secondary and third-level educational system that we have been offering in this paper. They highlight the commitment to schooling that we would expect to find as well as a widespread understanding of the issues around the examination system that have been the focus of the most intensive policy making in recent years (Laih, 1995). However they also make clear that, although the academic high school was firmly perceived by those we interviewed as the preferred school type, most of the students and parents we interviewed did have positive attitudes towards vocational education as an option for themselves or their children. It was seen as offering a schooling that could provide useful practical preparation for work, although parents judged the secondary school as more desirable overall for their children if they could have the best of all worlds. Unexpectedly, it was the relative costs of public versus private secondary education that clearly emerged as a major concern for both students and parents. We had not anticipated the force of this attitude and feeling, although in hindsight such a view is consistent with the thrust of our understanding of the welfare-orientation that is accompanying the social and political changes taking place in Taiwan.

We summarize the themes that emerged from the interviews under three heads:

- attitudes towards the place of the third level in educational careers;
- the issues that are seen as circling around the choice of a secondary school that must be made after middle school; and
- attitudes towards the system of public and private schools--and their relative private costs.

We will let our informants speak in their own words.

Attitudes towards the third level

I would like my two daughters to receive more education after they graduate from school [both are vocational school students], but they don't seem interested. They told me that they might do it after a few years' working experience; they want to experience life and see the world outside the school first. I can't say it is a bad idea, but what worries me is that they will finally find out how important it is to get a higher level of education. And if they do, it will be very difficult for them to pass the examinations then, because after years after leaving school, they will need to pick up all the subjects they learned in school. And, as you know, it is very difficult for fresh graduates to pass the examination.

Mother of two vocational school students

If my children were able to, going to a university is of course better--as everybody knows. Since they cannot, receiving education with job training is also a fine idea, but I think two more years' education after the vocational school is important in finding a better job.

Mother of a middle school student

Academic versus vocational schools

We noted above that both the students and parents we interviewed had positive attitudes towards vocational education and were, in the main, satisfied with their schools they attended or planned to attend. At the same time, however, the differences between the school types and the connection between school type and the important issue of access to the third level were seen quite clearly by both students and parents. In the words of two of middle school students:

My parents said it would be better if I can get into a academic high school, but they also said that, unless I can get into a college from there, it is useless. So I think it is a good idea to go for the vocational school; at least, I can avoid taking another entrance examination--which is like hell to me.

Middle school girl

Going to the academic high school is of course better because it is the way to go to universities; but it might not be as useful as the vocational school if you are not able to pass the college entrance exam. I know the exam is very difficult to pass, so I think settling for the vocational school is just fine for me.

Middle school girl

I think vocational school is more fun than the academic high school. I don't regret coming here. However, it is a fact that vocational students' chances of getting into advanced level are much less than the academic high school students. While our chance is below 20 percent, their chance is about 50 percent. I think it is not fair.

Girl in a public vocational school

The sense of inequity stated in this last quote was not directly articulated by many students and parents in our sample. However, for some parents and students, the differences between public and private schools did raise another aspect of the issue of equity--indicating their understanding of the emerging issue of "equal" citizenship.

Public versus private school

As we noted above, the theme of the relative costs of public versus private schools was consistently introduced into our discussions with both parents and students as *the* immediate issue around secondary education. It was seen as a problem across social groups; it was also an issue which had a clear focus in that it was seen as an important target of potential government action.

Some of my neighbors' sons and daughters will have to attend the supplementary school in the evening so that they can work during the day time to earn money to pay for the tuition. Although I and my husband can afford my daughter's tuition, I think the amount is really too high; it is really

a problem for poor families.

Wife of a proprietor of a small factory

I think the government should give greater subsidies to the private school so that we can pay less tuition.

Worker in small factory

Discussion

The troubling issues circling upper secondary and third-level education in Taiwan have been most often seen as centering on the mechanisms of allocation between school types, i.e., the examination system, and the attendant stresses this system places on students. These issues have been the focus of the most active recent policy initiation and policy making around upper secondary education. However when, in 1995, Yuang-Ze Lee, the highly regarded president of the Academia Sinica, initiated a campaign to abolish the current examination system, he introduced a new theme into policy discussions by noting that a necessary part of such reform would be the abolition of the distinct vocational schools by their transformation into general or academic high schools (Freedom Daily Tribune, March 23, 1995). The major opposition party, the Democratic Progressive Party (DPP), echoed and extended this argument by proposing the introduction of a comprehensive high school in its platform for the 1995 mayoral election in Taipei. The entry of such arguments about the structure of the school system into political debates in what is now a responsive polity foreshadows major changes in educational structure--but, as we will argue, major institutional changes in Taiwan's educational system will not be easily implemented. The long-standing structures of the secondary and third-level systems--with all of their cultural meaning--will pose major obstacles for such reforms.

Thus while a case can be made for the necessary change in the examination system, a focus on examination reform alone misreads the core problem facing Taiwanese secondary education. High school and university "entrance" examinations are only mechanisms for the controlled allocation of students to individual schools and school types, i.e., they are mechanisms for rationing access to scarce places. The mechanisms might be changed in any one of a number of ways, but the "problem" facing Taiwan's policy-makers would still remain. The examination issue merely serves to highlight the distribution of places in, and the structural rigidities of, the present multi-track post-compulsory education system with its secondary academic sector-- with its link to the university system--and the less desirable vocational sector--with its much weaker articulation with the third-level. It is the stratification of secondary education, and the increasing demand for the restricted but high-status "academic" track as this interacts with rising educational expectations, which will determine the future shape of Taiwan's upper secondary educational system. The issues which circle around the distribution of places among schools and school types are emerging as a major issue challenging educational policy making in Taiwan because of a potential fundamental transition of the secondary school from a mass-terminal to a mass-college preparatory institution. *Because of this secular change, we believe that the present structures, and the balance between the parts of the system, cannot remain in place.* But how can the system change? and what kind of change is foreseeable?

As the analysis we have offered suggests, there are several, analytically distinct

clusters of problems confronting the Taiwanese secondary and third-level systems. At one level there is a need for more places in the general or academic high school track to satisfy the increasingly widespread aspiration for both college-preparatory education. This issue intersects, however, with the larger problems circling around the framework for post-compulsory education with its interactions with the credentials and labor markets, which are themselves changing, so that it is not clear that any rigid (or "pure") binary system can provide either curricula that can embrace the larger numbers of students who aspire to higher-status post-compulsory education, or to an occupational preparation that meets the needs of changing, more knowledge-intensive credential and labor markets. There is, furthermore, the issue of the widely- perceived inequities associated with the public/private structure of provision with its state-funded high-status academic sector and the (largely) privately-funded lower-status vocational sector. The proposals of the reformers have called for a comprehensively organized state-based secondary sector; we must ask what this might mean and how it might be structured. What would be involved in any major policy shift away from the present pure, multi-track system, private/public to a different kind of system?

One way of framing these issues is suggested by Raffe's (1993) discussion of the issues circling around the reform of the Scottish post-compulsory and upper secondary system. In order to build his argument Raffe offers an analytical model based on a set of three ideal types of post-compulsory organization: a "pure" and a "flexible" "multi-track" organization and a "unified" organization although, as he notes, there is "no pure example of a unified system yet in existence" (p. 234). Table 3, taken from Raffe's paper, sets out the characteristics of each of these types and Table 4, also taken from Raffe's paper, describes the pathways that students may take in idealized pure and flexible multi-track systems.

Table 3
Types of Post-compulsory Education System

	Multi-track		Unified
	<i>Pure</i>	<i>Flexible</i>	
Basis of differentiation	Group	Group	Individual
Curriculum structure	Course, line, etc.	Course, line, etc.	Modular
Pathways	Limited transfer between tracks	Frequent opportunities for transfer	Flexible
Relation of stage to level	Relatively fixed within each track	Flexible	Flexible
Content	Academic and vocational	Academic and vocational, with large common	Integrated/diverse

		element	
Certification	Separate systems	Separate systems with credit transfer	Single system
Principles of curriculum, pedagogy and assessment	Differ between tracks	Smaller differences	(More or less) consistent across system
Mode and institution	Differ between tracks	Flexible relation with tracks	Diverse, with dominant mode/ institution
Values	Differ between tracks	Possibly differ between tracks	Pluralist

Source: Raffe. 1993.

Table 4
Arguments for the Two Types of System

	Multi-Track System	Unified System
Curriculum and learning	<ul style="list-style-type: none"> • Academic standards • Vocational standards • Ability grouping • Avoiding ill-effects of modularization 	<ul style="list-style-type: none"> • Integration of academic and vocational • Tailoring to individual needs
Incentives and Motivation	<ul style="list-style-type: none"> • Vocational/practical emphasis • Occupational identity • Avoiding academic drift 	<ul style="list-style-type: none"> • Avoiding early "rejection" • Incentive of incremental decision-making • Incentive of mainstream certification • Avoiding credentialist pressure on academic track
Social	<ul style="list-style-type: none"> • Alternative criteria of success and esteem (horizontal differentiation) 	<ul style="list-style-type: none"> • Later and less formal differentiation

Resources	<ul style="list-style-type: none"> • Avoiding costs of modular options 	<ul style="list-style-type: none"> • Avoiding costs of separate tracks and specialisms
Coordination	<ul style="list-style-type: none"> • Competition among tracks 	<ul style="list-style-type: none"> • Planning as coherent system

Source: Raffe. 1993.

Using Raffe's terminology, the present Taiwanese system clearly represents a pure, multi-track case with rigidly framed differentiation of clienteles, limited transfer between educational pathways, fixed staging, differentiated academic and vocational content, separate certification structures, different curricula, pedagogies, and assessment, different organizational delivery structures, and differentiated values. The outcome is a system which is experiencing significant stress because of the differential esteem and opportunities associated with the two sectors. These differences are, in their turn, associated with, and create, significant and widely felt problems for the middle school--at the end of which the decisive track determinations are made--and have stimulated the emergence of Taiwan's pervasive cram schools, which coach students for the high school and college entrance examinations.

As we have suggested, there is a strong basis for predicting that changes in the present system of educational service delivery in Taiwan are inevitable, and will be directed towards articulating the vocational school with the third level so that the vocational school can assume a clearer college-preparatory role. But what might the end-product of such changes look like? The present policy trajectory aims at expanding the articulation of the vocational system with an emerging multi-track third level by way of the degree-granting technical institutes (see Figure 2). In addition, moves are being made to expand the number of places in the academic secondary sector while maintaining the multi-track structure of the larger system. *But such reforms are essentially piece-meal in that they do not address the fundamental inflexibility of the present system's overall structures and the pervasive stresses around these structures, which derive both from the rigidities of the present multi-track system and the cost-differentials and expenditure-differentials between the private and public sectors.* Thus, at present the *only* direct and clearly accessible point of transfer across sectors is at the apex of the system, the degree-granting technical institutes. Furthermore, the looming question of where the private sector--which, if only politically, cannot be significantly disadvantaged by such a policy shift--might fit into a changed system has not been addressed by the reforms discussed or proposed to date. (Note 10)

We argue that this set of policy issues requires an ensemble of less piece-meal policy shifts, i.e., a systemic reform, directed at moving the overall secondary and third-level systems away from the present "pure" type towards a flexible, and ultimately "unified" type. But where are the points at which "reform" will be necessary if such a shift in system-type is to occur? We will conclude this paper by highlighting these necessary points for reform and sketching some of the options that seem available at each point.

Expansion of capacity in the third-level vocational system. The aspiration of the many students who are tracked into the vocational sector of the system but want a form of

advanced third-level schooling will need to be satisfied. Expansion of the third-level vocational sector is occurring, but many more places are needed. This need could be satisfied if many of the existing private vocational junior colleges became degree-conferring institutions. (Note 11) The legitimacy of degrees from such upgraded junior colleges could be assured by a transitional certification of specific programs in existing institutions (rather than the institutions themselves) by a national body which would accredit programs within institutions and grant the degrees. Such a gradualist approach to change of many junior colleges would also be a basis for manageable state subsidies for the upgrading costs.

A framework for matriculation to such programs must also be developed, and this framework must be directed at the needs of vocational school graduates and the vocational school sector-- and not be a way by which less successful academic students might enter the advanced vocational system. Such a matriculation framework (which could embrace work experience) could also be a basis for a curricular integration across the vocational sector by serving as a focus for either a more general upgrading of vocational curricula and for the emergence of a clear college-preparatory track within vocational schools.

The private vocational sector. As we noted above, over 60 percent of places in vocational schools are in the private sector. And, as we also found, the costs associated with private schooling, and the lesser quality of private schooling, represent one of the major points of widespread criticism of Taiwan's education policies. Two related options are available to address this problem--although neither, we would argue, is immediately feasible. First, the state could expand the public school component of, particularly, the vocational sector--with the implication that its schools would aggressively (and successfully) compete with the private sector. Second, the state could, as it were, take over all or part of the private sector by either providing operating costs for private schooling or by way of outright purchase of individual schools. However we believe that policies directed at one or another form of take-over of the private sector, which would all involve substantial new state expenditures, are unlikely given the expanding commitments of both central and local governments to increasing social expenditures. (Note 12)

Realistic acknowledgment of the constraints on the state's capacity to support private schooling leads to the possibility that the problem of the private schools' lack of competitiveness with the public school can be addressed not from the point of view of inputs but, rather, by addressing the outputs of the sector. What can make private schools more attractive in the sense that parents can see that their fees are being well spent? This possibility would involve strategies which can improve both the educational quality of the private sector and its articulation with the third-level system.

Vocational schooling requires the continuous renewal of its content and structures in order to respond to changing employment structures and occupational skills. Centrally-controlled and standardized curricula of the kind now mandated by the Ministry of Education (MOE) cannot produce such adaptability but, rather, only serve to limit schools' capacity to keep pace with changing workplaces. A deregulation of private schooling would allow schools to respond more directly to market demands and provide space for schools to develop specialties and reputations for excellence. Such deregulation would involve a shift of focus by the Ministry away from the management of the private sector by process-oriented regulations and towards a monitoring of the outcomes of the school. Additionally, MOE could support a market-oriented development of the private sector by way of funding for, for example, costs of program development, plant and equipment renewal, and the like. Such programs do not, of course, address the issues of

equal opportunity and equity which circle pervasively around the present pattern of differential state support for private and public schooling! But in the short and middle run these issues can, in all likelihood, only be addressed by the kind of expansion of the state (and academic) sector currently being initiated in and around Taipei where existing slack middle school capacity is being used to create new state academic secondary schools. (Note 13)

Towards a unified system. Reforms of the kind that we have been outlining can, we believe, address some of the immediate problems of the Taiwan secondary sector. However the long-run problems that are associated with the overall transition of the role of the school in the pathway to adulthood of Taiwan's adolescents remain. We have argued that two socially and educationally differentiated secondary school sectors offer an unstable structure for the provision of schooling in a democratic, egalitarian and increasingly wealthy society. Widely distributed wealth leads to expectations that can only be satisfied by access to higher-status education. The third level will expand its sway over the pathway to adulthood and occupational preparation and, with this expansion, will come ambitions for much greater access college-preparatory forms of schooling.

What kind of policy developments do such possibilities foreshadow? The answer to this question depends in part on the nature of the eventual "target" that is envisioned which, following Raffe (1993), could be a flexible multi-track system or a unified system. However, as Raffe observes, while there has been considerable interest in the idea of unified systems in western societies, there are in fact few examples of such a system in operation. The stratification function of secondary education emerges again and again as proposals become reforms that in most cases constitute one or another form of flexible multi-track system rather than a truly unified system. We predict that the same pattern will emerge in Taiwan: reformers of different stripes will explore the possibility of a unified system, but any reforms that emerge will be in the direction of a more flexible multi-track system. Thus the proposals we sketched above presume the continuation of a multi-track system for the foreseeable future.

What then would be involved if Taiwan's secondary schools were to move more firmly in the direction of a truly flexible multi-track secondary system? Following Raffe (1993; see Table 4 above), the key principles undergirding such a change would center on incrementalism in students' decision-making about their educational futures. This would, in its turn, depend on clear opportunities for transfer between tracks at the second and third level; such opportunities would, in their turn, require the availability of points of transfer between tracks, significant elements of common curricular content between tracks, mechanisms for credit transfer, and narrowed differences between tracks in curriculum, pedagogy, and assessment. Within the present structures of Taiwan's school system, the most obvious immediate constraint on the operationalization of these principles is found in the structures of the Joint College Entrance Examination (JCEE). Vocational students do not have ready access to the JCEE because their curricula do not match the content of the JCEE achievement tests; they cannot enter the mainline college sector because of they cannot participate in the JCEE.

If the JCEE is to remain as the primary mechanism for allocating third-level opportunities to high school graduates as well as the mechanism of curricular articulation and academic selection between the second and third levels, mechanisms by which vocational school students can be given access to the JCEE must be developed. Practically this means that some "new" form of the JCEE will need to be developed which brings into one frame both general and the vocational schools and curricula *but does not, in doing so, submerge the variety and the distinctive missions of the vocational sector.*

The issues which surround such a reform are complex and beyond the scope of this paper. However it is clear that any modification of the examination that retains its character as an academic achievement test rather than an aptitude test will require the development of a framework of a core and options. Such a structure would, in its turn, provide a framework within which vocational schools could develop college-preparatory tracks which could provide access to the third level. At the same time such a development would be a basis for a merger between the curricula of the academic and vocational schools-- for at least some students.

While reform of the JCEE would permit a greater integration of curricula across tracks directed from "above," the plans of the Ministry of Education to extend compulsory education from nine to ten years and the recent proposal to abolish the secondary school entrance examination and reform the university-entrance examination system provide a framework for a curricular integration from "below." Thus we would argue that this extension of the compulsory school should be accompanied by the development of a common 10th grade curriculum across all schools and school type--thus reducing the time (and thus the coverage) associated with the curricula oriented towards the JCEE, and, perhaps, making the difficulties of transfer across tracks less insurmountable than they now are. And were the extension of compulsory schooling accompanied (as it surely must be) with one or another form of a voucher system, the private costs of the private vocational system would be significantly reduced. (Note 14)

Conclusion

While there have been proposals made by Taiwan's "progressive" opinion leaders for the early creation of a publicly-supported comprehensive upper secondary system, we have argued in this paper that this goal is unrealistic in the light of present structures and state policies and priorities. Yet there are major problems within and around upper secondary education in Taiwan which for political, social and educational reasons must be, and will need to be, addressed by Taiwan's educational planners. We have suggested that such planning must be directed to

- the widely understood opportunity costs, in terms of access to the increasingly valued third level, associated with the pure dual-track system of provision of upper secondary education, and;
- the widely perceived inequities in family costs of attending a private school, the most common school type in the vocational upper secondary track where 80% of students are enrolled.

We have argued here that the middle-run "solution" to these problems centers on the conversion of the present multi-track system from a "pure" to a "flexible" form by addressing the points at which barriers inhibit the emergence of a mass college-preparatory larger system from the present élite college-preparatory system. We have further argued that such developments should and must include the private sector. We suggest that policies which will effect a gradual merger across the upper secondary school sectors and across private and state providers will diminish the widespread sense of denied opportunity and/or inequity that trouble the present system.

Notes

1. Net enrollments are calculated as the ratio of the enrollment at a school level of students of specific ages to all people of that age in a national population. Gross enrollment rates are calculated by determining the ratio of students in given grades in a school as a proportion of the population of the appropriate ages. Taiwan's gross upper secondary enrollment rate in 1995 was 91 percent.
2. For the background to the expansion of the vocational education sector, see Li (1995).
3. Although places in the third-level vocational system have rapidly increased in recent years--from 18,000 in 1985 to 51,000 in 1990 and to almost 78,000 in 1995--there are many fewer third-level opportunities for vocational students than for academic high school students (Ministry of Education 1996: 117).

In 1996 the Ministry of Education (MOE) "required" or "allowed" universities and colleges to admit more high school graduates than in the recent past. It is estimated that 80 percent of academic high school graduates will enter third-level institutions in 1997.

4. In 1990 the per student expenditure in public general secondary schools was NT\$51,516 when compared to NT\$39,557 for private schools. In 1995 the tuition and fees in public academic school ranged from NT\$4040 to NT\$4290 while private academic schools charged from NT\$13,770 to NT\$20,320. The per student expenditure (1990) in public vocational schools was NT\$68,624 as compared to NT\$44,953 in private vocational schools while tuition and fees in public vocational schools ranged from NT\$3500 to 4410 as compared to a range from NT\$19,550 to 24,260 in private vocational schools. (Per student expenditures are taken from Chen [1990]; the data on fees in public and private schools was from the Department of Secondary Education and the Department of Vocational and Technical Education of the Ministry of Education. Tuition and fee levels for private schools are prescribed by the Ministry of Education.)
5. Chen (1990) reports that the per student subsidy in public academic schools is NT\$46,000-48,000 and for public vocational schools NT\$63,000-68,000; she estimates that private academic schools receive a per student subsidy of NT\$6593 and vocational schools NT\$4111.

The intersection between private and public provision and the organizational form of general and vocational secondary education defines yet another issue in Taiwan's secondary education system. Thus public junior colleges and public vocational schools with their lower fees and higher spending become a preferred sector within the vocational sector while the curricula of these schools makes them (overall) a higher-status third technical (rather than vocational) sector within the overall system. They are schools which confer, moreover, advantages in terms of access to the very limited (in terms of opportunities) technical sub-system of the third-level system. They do not confer ready access to the university system.

The distinction between school types also interacts with social class. Chung (1989) and Yang (1994) report that students of higher social status attend academic high schools while students of lower status attend vocational schools. The sharp difference in SES across school types is obviously problematic from the point of view of equity. Students from families with lower SES pay higher tuition than those of higher SES.

6. For brief discussions of such priorities in the larger Chinese context, see Pepper (1991).
7. Of course, the "public" groups that are salient in determining regime legitimacy

will vary depending of the order.

8. Only about four percent these vocational students were successful whereas 51 percent of the academic high school registrants passed the examination.
9. Students from two middle schools were group-interviewed. One school was in a working class community in suburban Taipei County; the other was in an agricultural and fishing community between the middle and south sides of the island. Each school was "typical" in terms of school policies and school size; in each case less than 10 percent of the graduating grade enter a academic high school.

In the case of the suburban Taipei school, students from three 9th grade classes, two "normal" and one "vocational" were selected for interviews. The parents of the students were interviewed individually, either face-to-face or by phone. In the other middle school students from two classes, one "normal" and one "advanced" were group-interviewed.

Students and parents from four vocational school were also interviewed: a public commercial school in Taipei City, a private home economics school in Taipei County, a private industry school in Taipei county, and a private nursing school in Taipei City.

10. "The private sector has contributed a lot to the country's schooling. It is not ethical to drive them out of business. Instead the government should be grateful for their contribution and help them financially". (Interview with Chin-Ji Wu, head of the Department of Vocational and Technical Education, Ministry of Education).

Current discussion of private schooling centers on deregulation of the sector (as opposed to the current tight regulation of the sector by MOE). The implicit goal of such discussion is to encourage greater provision of private schooling.

11. Such a reform has precedents. In 1987 nine (state) normal teachers colleges were upgraded to degree-granting teachers colleges.
12. e.g., a national health care system was implemented in March 1995 and a system of monthly allowances for the elderly has been introduced by the DPP for residents of Taipei City. The national government also proposed social aid for the elderly poor in 1996.
13. While such reforms do threaten existing private vocational schools, the removal of secondary level capacity of junior colleges as such institutions become more clearly third-level institutions would remove capacity from the secondary vocational sector.
14. If the value of such vouchers was set in a way that created more or less parity between the private costs of attending the 10th grade in the public and private sectors, the infusion of funding into the private sector would go a long way to enhancing the quality of private schooling.

References

Chen, L. C. (1993). *Research on public educational expenditures at upper secondary education and the redistribution of incomes*. Taipei: National Science Council. (In Chinese).

Cheng, T. J. (1993). Taiwan in democratic transition. In James E. Morley (Ed.) *Driven by growth: Political change in the Asia-Pacific region* (pp. 193-218). Armonk, NY: M. E. Sharpe.

Chuang, S. Y. (1989). A study of the issue of equal educational opportunity in Taiwan's upper secondary education. Master's thesis, National Kaohsiung Normal College. (In Chinese).

Chyu, L. H., & Smith, D. C. (1991). Academic secondary education." In D. C. Smith (Ed.), *The Confucian continuum: Educational modernization in Taiwan* (pp. 99-165). New York: Praeger.

Council of Education Reform of the Executive Yuan. (1995). Tracking and education: The meaning of extending the academic high school and the university. Paper for the Fourth Meeting of the Second Seminar on Educational Reform: Examining Tracking and the Examination System. Taipei: Author (In Chinese).

Craig, J. E. (1981). The expansion of education. In D. C. Berliner (Ed.), *Review of Research in Education*, Vol. 9 (pp. 151-213). Washington, DC: American Educational Research Association.

Craig, J. E., & Spear, N. (1982a). Explaining educational expansion: an agenda for historical and comparative research. In M. S. Archer (Ed.), *The sociology of educational expansion: Take-off, growth and inflation in educational systems* (pp. 133-157). London: SAGE.

Craig, J. E. & Spear, N. (1982b). Rational actors, group processes and the development of educational systems. In M. S. Archer (Ed.), *The sociology of educational expansion: Take-off, growth and inflation in educational systems* (pp. 65- 90). London: SAGE.

Cummings, W. K. (1997). Private education in Eastern Asia. In W. K. Cummings & P. G. Altbach, (Eds.), *The challenge of eastern Asian education: Implications for America* (pp. 135- 152). Albany, NY: State University of New York Press.

Deininger, K., & Squire, L. (1996). A new data set measuring income inequality. *World Bank Economic Review*, 10 (3), 565-591.

Department of Education of Taiwan Provincial Government. (1994a). *The 20th survey of the destinations of public and private general high school graduates of the 1992 school year*. Nan-Tou: Author. (In Chinese).

Department of Education of Taiwan Provincial Government. (1994b). *The 20th Survey of the Destinations of Public and Private Vocational School Graduates of the 1992 School Year*. Nan-Tou: Author. (In Chinese).

Department of Education of Taiwan Provincial Government. (1994b). *Educational statistics of Taiwan Province*. Nan-Tou: Author. (In Chinese).

Dreeben, R. (1971). American schooling: patterns and processes of stability and change. In B. Barber & A. Inkeles (Eds.), *Stability and Social Change* (pp. 82-119). Boston: Little Brown.

Englund, T (1996) The public and the text. *Journal of Curriculum Studies*, 28 (1), 1-35.

Epstein, E. H., & Kuo, W.-F. (1991). Higher education. In D. C. Smith (Ed.), *The*

Confucian continuum: Educational modernization in Taiwan (pp. 167-220). New York: Praeger.

Gouvias, D. (1998). Comparative issues of selection in Europe: The case of Greece. *Education Policy Analysis Archives*, 6 (4). (Available online at <http://olam.ed.asu.edu/epaa/v6n4.html>).

Laih, H.-L. (1996). The transition of Taiwan's upper secondary education. Ph.D. dissertation, University of Illinois at Urbana-Champaign, Urbana, IL.

Li, K.T. (1995). *The evolution of policy behind Taiwan's development success*, 2nd edition. Singapore: World Scientific.

Marshall, T. H. (1964). *Class, citizenship and social development*. New York: Doubleday.

Ministry of Education. (1994). *Report on middle school students' failure to attend school*. Taipei: Author. (In Chinese).

Ministry of Education. (1995). *Education statistics of the Republic of China*. Taipei: Author. (In Chinese).

Ministry of Education. (1997). *Educational statistical indicators of the Republic of China*. Taipei: Author (In Chinese).

Organization for Economic Cooperation and Development (OECD), Centre for Educational Research and Innovation. (1993). *Education at a glance: OECD indicators / Regards sur l'éducation: Les indicateurs de l'OCDE*. Paris: Author.

Pepper, S. (1991). Post-Mao reforms in Chinese education: Can the costs of the past be laid to rest? In I. Epstein (Ed.), *Chinese education: Problems, policies, and prospects* (pp. 1-41). New York: Garland.

Raffe, D. (1993). Multi-track and unified systems of post-compulsory education and "Upper secondary education in Scotland": An analysis of two debates. *British Journal of Educational Studies*, 41 (3): 223-251.

Smith, D. C. (1991). Foundations of modern Chinese education and the Taiwan experience. In D. C. Smith (Ed.), *The Confucian continuum: Educational modernization in Taiwan* (pp. 1-63). New York: Praeger.

Tien, H.-M. (1989). *The great transition: Political and social change in the Republic of China*. Stanford, CA: Hoover Institution Press.

Tien, H.-M. (1992). Transformation of an authoritarian party state: Taiwan's development experience. In T.-J. Cheng & S. Haggard (Eds.) *Political change in Taiwan* (pp. 33- 56). Boulder, CO and London: Lynne Rienner Publishers.

Trow, M. (1960). The second transformation of the American secondary education. *International Journal of Comparative Sociology*, 78 (2), 47-62.

Wu, K. B. (1997). Education policies in Taiwan (China) and Hong Kong. In W. K.

Cummings & P. G. Altbach (Eds.), *The challenge of eastern Asian education: Implications for America* (pp. 189-203). Albany, NY: State University of New York Press.

Yang, Y. R. (1994). *Education and national development : Taiwan's experience*. Taipei: Kuei-Kuan Press. (In Chinese).

Young, Y.-R. (1995). School as an epitome of the society: education and social change in Taiwan. In G. A. Postiglione & L. W. On (Eds.), *Social change and educational development: Mainland China, Taiwan and Hong Kong* (pp. 120-129). Centre of Asian Studies Occasional Papers and Monographs, No. 115. Hong Kong: Centre of Asian Studies, University of Hong Kong.

Yung, K. C.-S., & Welch, F. G. (1991). Vocational and technical education. In D. C. Smith (Ed.), *The Confucian continuum: Educational modernization in Taiwan* (pp. 221-275). New York: Praeger.

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